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Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
Sheet		Page 1	of	10	Application Number To be assigned Filing Date Herewith First Named Inventor Cech, Thomas R. Group Art Unit To Be Assigned Examiner Name To Be Assigned Attorney Docket Number 015389-002970US

11002 U.S. PTO
 10/05/03
 015389

U.S. PATENT DOCUMENTS						
Examiner Initials *	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
dw	A	3,817,837		Tanenholtz et al.	06-18-74	
dw	B	3,850,752		Schuurs et al.	11-26-74	
dw	C	3,939,350		Kronick et al.	02-17-76	
dw	D	3,996,345		Ullman et al.	12-01-76	
dw	E	4,275,149		Litman et al.	06-23-81	
dw	F	4,277,437		Maggio	07-07-81	
dw	G	4,366,241		Tom et al.	12-28-82	
dw	H	4,683,195		Mullis et al.	07-28-87	
dw	I	4,683,202		Mullis	07-28-87	
dw	J	4,816,567		Cabilly et al.	03-28-89	
dw	K	4,965,188		Mullis et al.	10-23-90	
dw	L	5,489,508		West et al.	02-06-96	
dw	M	5,583,016		Villeponteau et al.	12-10-96	
dw	N	5,747,317		Cao	05-05-98	
dw	O	5,770,422		Collins	06-23-98	
dw	P	6,093,809		Cech, et al.	07/25/00	
dw	Q	6,258,535	B1	Villeponteau et al.	07-10-01	
dw	R	6,261,556	B1	Weinrich et al.	07-17-01	
dw	S	6,261,836	B1	Cech et al.	07-17-01	


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		Office ³	Number ⁴	Kind Code ⁵ (if known)			
dw	T	JP	09154575-A			06-17-97	
dw	U	PCT	WO 93/23572			11/93	
dw	V	PCT	WO 95/13382			5/95	
dw	W	PCT	WO 96/01835			01-25-96	
dw	X	PCT	WO 96/12811			05-02-96	
dw	Y	PCT	WO 96/19580			06-27-96	
dw	Z	PCT	WO 96/40868			12-19-96	
dw	AA	PCT	WO 98/01542			01-15-98	
dw	AB	PCT	WO 98/01543			01-15-98	
dw	AC	PCT	WO 98/07838			03-05-98	
dw	AD	PCT	WO 98/08938			02-26-98	

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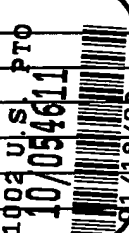
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Group Art Unit		To Be Assigned			
Examiner Name		To Be Assigned			
Attorney Docket Number		015389-002970US			

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dw	AE	PCT	WO 98/21343			05-22-98		
dw	AF	PCT	WO 98/23759			06-98		
dw	AG	PCT	WO 98/37181			08-27-98		
dw	AH	PCT	WO 98/45450			10-15-98		
dw	AI	PCT	WO98/59040			12-30-98		
dw	AJ	PCT	WO99/01560			01-14-99		

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS				
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dw	AK	1994 Genome Issue of <i>Science</i> (265:1981f)		
dw	AL	Anderson and Young, "Quantitative Filter Hybridization" in <i>Nucleic Acid Hybridization</i> pp73-111 (1985)		
dw	AM	Ausubel <i>et al.</i> , <i>Current Protocols in Molecular Biology</i> , John Wiley & Sons, New York NY (1989)		
dw	AN	Autexier <i>et al.</i> , "Reconstitution of human telomerase activity and identification of a minimal functional region of the human telomerase RNA," (1996) <i>EMBO J.</i> 15:5928		
dw	AO	Autexier, C. et al, "Telomerase and cancer: revisiting the telomere hypothesis," <i>Trends in Biochemical Sciences</i> , 10 (21): 387-391 (1996).		
dw	AP	Auxier and Greider, "Functional reconstitution of wild-type and mutant <i>Tetrahymena</i> telomerase," (1994) <i>Genes Develop.</i> , 8:563		
dw	AQ	Avilion, A., "Characterization and expression of human telomerase," <i>Dissertation Abstracts International</i> , 56 (11) 5930-B (1996).		
dw	AR	Barinaga, M., "The Telomerase Picture Fills In," <i>Science</i> 276:528-529 (1997).		
dw	AS	Berger and Kimmel, <i>Guide to Molecular Cloning Techniques</i> , Meth. Enzymol., vol. 152, Academic Press, San Diego CA (1987)		

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dm	AT	Biessmann et al., "Addition of Telomere-Associated HeT DNA Sequences "Heals" Broken Chromosome Ends in Drosophila," Cell 61:663 [1990].	
dm	AU	Bitter et al., "Expression and secretion vectors for yeast," Meth Enzymol., (1987) 153:516	
dm	AV	Blackburn and Chiou, "Non-nucleosomal packaging of a tandemly repeated DNA sequence at termini of extrachromosomal DNA coding for rRNA in Tetrahymena," (1981) Proc. Natl. Acad. Sci., 78:2263	
dm	AW	Blackburn and Gall, "A tandemly repeated sequence at the termini of the extrachromosomal ribosomal RNA genes in Tetrahymena," (1978) J. Mol. Biol., 120:33	
dm	AX	Blackburn, "Telomerases," (1992) Ann. Rev. Biochem., 61:113	
dm	AY	Bodnar et al., "Extension of Life-Span by Introduction of Telomerase into Normal Human Cells," (1998) Science, 279:349	
dm	AZ	Bradford, "A Rapid and Sensitive method for the Quantitation of Microgram Quantities of Protein Utilizing the Principle of Protein-Dye Binding," (1976) Anal. Biochem., 72:248	
aw	BA	Braunstein et al., "Transcriptional silencing in yeast is associated with reduced nucleosome acetylation," (1993) Genes Develop., 7:592	
aw	BB	Calvio et al., "Identification of hnRNP P2 as TLS/FUS using electrospray mass spectrometry," (1995) RNA, 1:724	
dm	BC	Caruthers et al., "New chemical methods for synthesizing polynucleotides," (1980) Nucleic Acids Res. Symp. Ser., 215-223	
dm	BD	Chan and Tye, "Organization of DNA sequences and replication origins at yeast telomeres," (1983) Cell, 33:563	
dm	BE	Colbere-Garapin et al., "A new dominant hybrid selective marker for higher eukaryotic cells," (1981) J. Mol. Biol., 150:1	
dm	BF	Cole et al., "The EBV-hybridoma technique and its application to human lung cancer," Monoclonal Antibodies and Cancer Therapy, Alan R. Liss Inc., New York NY 77-96 (1985)	
dm	BG	Collins et al., "Purification of Tetrahymena telomerase and cloning of genes encoding the two protein components of the enzyme," (1995) Cell, 81:677	
dm	BH	Collins, K., "Structure and Function of Telomerase," Curr. Op. Cell. Biol. 8:374-380 (1996).	

Examiner Signature	<i>dm</i>	Date Considered	12/8/03
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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
dw	BI	Conrad <i>et al.</i> , "RAP1 protein interacts with yeast telomers in vivo: Overproduction alters telomere structure and decreases chromosome stability," (1990) <i>Cell</i> , 63:739	
dw	BJ	Coombs, <i>Dictionary of Biotechnology</i> , Stockton Press, New York NY (1994)	
dw	BK	Cote <i>et al.</i> , "Generation of human monoclonal antibodies reactive with cellular antigens," (1983) <i>Proc. Natl. Acad. Sci.</i> , 80:2026	
dw	BL	Counter <i>et al.</i> , "The catalytic subunit of yeast telomerase," (1997) <i>Proc. Natl. Acad. Sci.</i> , 94:9202	
dw	BM	Creighton, <i>Proteins, Structures and Molecular Principles</i> , WH Freeman and Co, New York NY [1983].	
dw	BN	Dieffenbach and Dveksler, <i>PCR Primer, a Laboratory Manual</i> , Cold Spring Harbor Press, Plainview NY (1995)	
dw	BO	Duplaa <i>et al.</i> , "Quantitative analysis of polymerase chain reaction products using biotinylated dUTP incorporation," (1993) <i>Anal. Biochem.</i> , 212:229	
dw	BP	Fang <i>et al.</i> , "Oxytricha telomere-binding protein: separable DNA-binding and dimerization domains of the α -subunit," <i>Genes Develop.</i> 7:870 (1993) and Gray <i>et al.</i> , (1991) <i>Cell</i> 67:807	
dw	BQ	Feng <i>et al.</i> , "The RNA Component of Human Telomerase," (1995) <i>Science</i> , 269:1236	
dw	BR	GenBank Accession No. AA281296	
dw	BS	Genbank accession no. AA299878	
dw	BT	Genbank accession no. AA311750	
dw	BU	Gilley <i>et al.</i> , "Altering specific telomerase RNA template residues affects active site function," (1995) <i>Genes Develop.</i> , 9:2214	
dw	BV	Gottschling and Cech, "Chromatin Structure of the Molecular Ends of Oxytricha Mononuclear DNA: Phased Nucleosomes and a Telomeric Complex," (1984) <i>Cell</i> , 38:501	
dw	BW	Gottschling and Zakian, "Telomere proteins: specific recognition and protection of the natural termini of Oxytricha macronuclear DNA," (1986) <i>Cell</i> 47:195	

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<i>dw</i>	BX	Grant <i>et al.</i> , Meth Enzymol., (1987) 153:516-544	
<i>dw</i>	BY	Greenwood <i>et al.</i> , "Phylogenetic relationships within the class oligohymenophorea, phylum ciliophora, inferred from the complete small subunit rRNA gene sequences of <i>Colpidium campylum</i> , <i>Glaucoma chattoni</i> , and <i>Opisthionecta henneguyi</i> ," (1991) <i>J. Mol. Evol.</i> , 3:163	
<i>dw</i>	BZ	Greider and Blackburn, "A telomeric sequence in the RNA of Tetrahymena telomerase required for telomere repeat synthesis," (1989) <i>Nature</i> , 337:331	
<i>dw</i>	CA	Greider and Blackburn, "Identification of a specific telomere terminal transferase activity in Tetrahymena extracts," (1985) <i>Cell</i> , 43:405	
<i>dw</i>	CB	Greider, "Telomerase is processive," (1991) <i>Mol. Cell. Biol.</i> , 11:4572	
<i>dw</i>	CC	Greider, "Telomere Length Regulation," (1996) <i>Ann. Rev. Biochem.</i> , 65:337	
<i>dw</i>	CD	Hampton <i>et al.</i> , <i>Serological Methods a Laboratory Manual</i> , APS Press, St Paul MN (1990)	
<i>dw</i>	CE	Harrington <i>et al.</i> , "A Mammalian Telomerase-Associated Protein," (1997) <i>Science</i> , 275:973	
<i>dw</i>	CF	Harrington <i>et al.</i> , "Human telomerase contains evolutionarily conserved catalytic and structural subunits," (1997) <i>Genes Dev.</i> , 11:3109	
<i>dw</i>	CG	Hartman and Mulligan, "Two dominant-acting selectable markers for gene transfer studies in mammalian cells," (1988) <i>Proc. Natl. Acad. Sci.</i> , 85:8047	
<i>dw</i>	CH	Henderson and Blackburn, "An overhanging 3' terminus is a conserved feature of telomeres," (1989) <i>Mol Cell. Biol.</i> , 9:345	
<i>dw</i>	CI	Hillier, <i>et al.</i> , Direct Submission to GenBank, EST Database, Accession No. W70315, Available Oct. 17, 1996.	
<i>dw</i>	CJ	Horn <i>et al.</i> , "Synthesis of oligonucleotides on cellulose. Part II: design and synthetic strategy to the synthesis of 22 oligodeoxynucleotides coding for gastric inhibitory polypeptide (GIP)," (1980) <i>Nucleic Acids Res. Symp. Ser.</i> , 225-232	
<i>dw</i>	CK	Hudson <i>et al.</i> , "An STS-based map of the human genome," (1995) <i>Science</i> , 270:1945	
<i>dw</i>	CL	Huse <i>et al.</i> , "Generation of a large combinatorial library of the immunoglobulin repertoire in phage lambda," (1989) <i>Science</i> , 246:1275	

Examiner Signature	<i>M. Alveda</i>	Date Considered	12/08/03
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dmf	CM	Kilian <i>et al.</i> , "Isolation of a candidate human telomerase catalytic subunit gene, which reveals complex splicing patterns in different cell types," (1997) <i>Hum. Mol. Genet.</i> , 6:2011	
dmf	CN	Kipling and Cooke, "Hypervariable ultra-long telomeres in mice," (1990) <i>Nature</i> 347:400	
dmf	CO	Klobutcher <i>et al.</i> , "All gene-sized DNA molecules in four species of hypotrichs have the same terminal sequence and an unusual 3' terminus," (1981) <i>Proc. Natl. Acad. Sci.</i> , 78:3015	
dmf	CP	Koehler and Milstein, "Continuous cultures of fused cells secreting antibody of predefined specificity," (1975) <i>Nature</i> 256:495	
dmf	CQ	Kosbor <i>et al.</i> , "The production of monoclonal antibodies from human lymphocytes," (1983) <i>Immunol. Today</i> 4:72	
dmf	CR	Lamond and Sproat, (1994) "Isolation and Characterization of Ribonucleoprotein Complexes," pp103-140	
dmf	CS	Lamond <i>et al.</i> , "Probing the structure and function of U2 snRNP with antisense oligonucleotides made of 2'-OME RNA," (1989) <i>Cell</i> , 58:383	
dmf	CT	Lendvay <i>et al.</i> , "Senescence mutants of <i>Saccharomyces cerevisiae</i> with a defect in telomere replication identify three additional EST genes," (1996) <i>Genetics</i> , 144	
dmf	CU	Lingler <i>et al.</i> , "Purification of telomerase from <i>Euplotes aedeolatus</i> : requirement of a primer 3' overhang," (1996) <i>Proc. Natl. Acad. Sci.</i> , 93:10712	
dmf	CV	Lingler <i>et al.</i> , "Reverse transcriptase motifs in the catalytic subunit of telomerase," (1997) <i>Science</i> , 276:561	
dmf	CW	Lingner <i>et al.</i> , "Telomerase RNAs of different ciliates have a common secondary structure and a permuted template," (1994) <i>Genes Develop.</i> , 8:1984	
dmf	CX	Lingner <i>et al.</i> , "Telomerase and DNA End Replication: No Longer a Lagging Strand Problem?," (1995) <i>Science</i> 269:1533	
dmf	CY	Lowy <i>et al.</i> , "Isolation of transforming DNA: Cloning the hamster apt gene," (1980) <i>Cell</i> , 22:817	
dmf	CZ	Lundblad, V. <i>et al.</i> , "RNA-dependent polymerase motifs in EST1: tentative identification of a protein component of an essential yeast telomerase," <i>Cell</i> , 60 (5):29-30 (1990).	
dmf	DA	Lustig and Petes, Identification of yeast mutants with altered telomere structure," (1986) <i>Proc. Natl. Acad. Sci.</i> , 83:1398	

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dw	DB	Lustig, A., "The Identification of Telomerase Subunits: Catalysing Telomere Research," Trends Cell. Biol. 7:299-302 (1997).	
dw	DC	Maddox et al., "Elevated serum levels in human pregnancy of a molecule immunochemically similar to eosinophil granule major basic protein," (1983) J. Exp. Med., 158:1211	
dw	DD	Makarov et al., "Nucleosomal Organization of Telomere-Specific Chromatin in Rat," (1993) Cell, 73:775	
dw	DE	McEachern and Blackburn, "runaway telomere elongation caused by telomerase RNA gene mutation," (1995) Nature, 376:403	
dw	DF	Melby et al., "Quantitative measurement of human cytokine gene expression by polymerase chain reaction," (1993) J. Immunol. Meth., 159:235	
dw	DG	Merrifield, "Solid phase peptide synthesis. I. The synthesis of a tetrapeptide," (1963) J. Am. Chem. Soc., 85:2149	
dw	DH	Meyerson et al., "hEST2, the Putative Human Telomerase Catalytic Subunit Gene, Is Up-Regulated in Tumor Cells and during Immortalization," (1997) Cell, 90:785	
dw	DI	Murray, In McGraw Hill Yearbook of Science and Technology, (1992) McGraw Hill, New York NY, pp 191-196	
dw	DJ	Nakamura et al., "Telomerase Catalytic Subunit Homologs from Fission Yeast and Human," (1997) Science, 277:955	
dw	DK	Nakayama et al., "Cloning of a Candidate cDNA Encoding a Proteinaceous Component of Mammalian Telomerase," Mol. Biol. Cell. Abstracts Supp. 7 p. 286a, .sctn. 1664 (1996).	
dw	DL	Nakayama et al., "TLP1: A Gene Encoding a Protein Component of Mammalian Telomerase Is a Novel Member of WD Repeats Family," (1997) Cell, 88:875	
dw	DM	Nielsen et al., (1993) "Peptide nucleic acids (PNAs): Potential antisense and anti-gene agents," Anticancer Drug Des., 8:53	
dw	DN	Oka et al., "Inverted terminal repeat sequence in the macronuclear DNA of Stylonychia pustulata," (1980) Gene, 10:301	
dw	DO	Olovnikov, "A theory of marginotomy: The incomplete copying of template margin in enzymic synthesis of polynucleotides and biological significance of the phenomenon," (1973) J. Theor. Biol., 41:181	
dw	DP	Orlandi et al., "Cloning immunoglobulin variable domains for expression by the polymerase chain reaction," (1989) Proc. Natl. Acad. Sci., 86:3833	

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				First Named Inventor	Cech, Thomas R.
				Group Art Unit	To Be Assigned
				Examiner Name	To Be Assigned
				Attorney Docket Number	015389-002970US
Sheet	Page 8	of	10		

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JW	DQ	Prescott, "The DNA of ciliated protozoa," (1994) <i>Microbiol. Rev.</i> , 58:233	
JW	DR	Price, (1993) <i>Blood Rev.</i> , 7:127	
JW	DS	Rhodes <i>et al.</i> , "Transformation of maize by electroporation of embryos," (1995) <i>Meth. Mol. Biol.</i> , 55:121	
JW	DT	Roberge <i>et al.</i> , "A strategy for a convergent synthesis of N-linked glycopeptides on a solid support," (1995) <i>Science</i> , 269:202	
JW	DU	Romero and Blackburn, "A conserved secondary structure for telomerase RNA, " (1991) <i>Cell</i> , 67:343	
JW	DV	Sambrook <i>et al.</i> , <i>Molecular Cloning, A Laboratory Manual</i> , Cold Spring Harbor Press, Plainview NY (1989)	
JW	DW	Sandell <i>et al.</i> , "Transcription of yeast telomere alleviates telomere position effect without affecting chromosome stability," (1994) <i>Proc. Natl. Acad. Sci.</i> , 91:12061	
JW	DX	Sanger <i>et al.</i> , "DNA sequencing with chain-terminating inhibitors," <i>Proc. Natl. Acad. Sci.</i> , 74:5463 [1977].	
JW	DY	Scharf <i>et al.</i> , "Heat stress promoters and transcription factors," (1994) <i>Result Probl. Cell Differ.</i> 20:125	
JW	DZ	Shampay and Blackburn, "Generation of telomere-length heterogeneity in <i>Saccharomyces cerevisiae</i> ," (1988) <i>Proc. Natl. Acad. Sci.</i> , 85:534	
JW	EA	Sheen and Levis, "Transposition of the LINE-like retrotransposon TART to <i>Drosophila</i> chromosome termini," (1994) <i>Proc. Natl. Acad. Sci.</i> , 91:12510	
JW	EB	Singer and Gottschling, "TLC1: Template RNA Component of <i>Saccharomyces cerevisiae</i> Telomerase," (1994) <i>Science</i> 266:404	
JW	EC	Singer, M., "Unusual Reverse Transcriptases," <i>J. Biol. Chem.</i> 270(42):24623-24626 (1995).	
JW	ED	Starling <i>et al.</i> , "Extensive telomere repeat arrays in mouse are hypervariable," (1990) <i>Nucleic Acids Res.</i> , 18:6881	
JW	EE	Swanton <i>et al.</i> , "Arrangement of Coding and Non-coding Sequences in the DNA Molecules Coding for rRNAs in <i>Oxytricha</i> sp.," (1980) <i>Chromosoma</i> 77:203	

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dm	EF	Tommerup <i>et al.</i> , "Unusual chromatin in human telomeres," (1994) <i>Mol. Cell. Biol.</i> , 14:5777	
dm	EG	Trask, "Fluorescence in situ hybridization: application in cytogenetics and gene mapping," (1991) <i>Trends Genet.</i> , 7:149	
dm	EH	Verma <i>et al.</i> , "Human Chromosomes: A Manual of Basic Techniques," Pergamon Press, New York NY (1988)	
dm	EI	Watson, "Origin of concatemeric T7 DNA, " (1972) <i>Nature New Biol.</i> , 239:197	
dm	EJ	Weinrich <i>et al.</i> , "Reconstitution of human telomerase with the template RNA component hTR and the catalytic protein subunit hTERT," (1997) <i>Nat. Genet.</i> , 17(4):498	
dm	EK	Wellinger <i>et al.</i> , "Origin activation and formation of single-strand TG ₁₋₃ tails occur sequentially in late S phase on a Yeast linear plasmid," (1993) <i>Mol. Cell. Biol.</i> , 13:4057	
dm	EL	Wellinger <i>et al.</i> , "Saccharomyces Telomeres Acquire Single-Strand TG ₁₋₃ Tails Late in S Phase," (1993) <i>Cell</i> 72:51	
dm	EM	Whitehead Institute/MIT Center for Genome Research, Genetic Map of the Mouse, Database Release 10, April 28, 1995	
dm	EN	Wigler <i>et al.</i> , "Transfer of purified herpes virus thymidine kinase gene to cultured mouse cells," (1977) <i>Cell</i> , 11:223	
dm	EO	Wigler <i>et al.</i> , "Transformation of mammalian cells with an amplifiable dominant-acting gene," (1980) <i>Proc. Natl. Acad. Sci.</i> , 77:3567	
dm	EP	Winter and Milstein, "Man-made antibodies," (1991) <i>Nature</i> , 349:293	
dm	EQ	Wright <i>et al.</i> , "Saccharomyces telomeres assume a non-nucleosomal chromatin structure," (1992) <i>Genes Develop.</i> , 6:197	
dm	ER	Yu <i>et al.</i> , "In vivo alteration of telomere sequences and senescence caused by mutated Tetrahymena telomerase RNAs," (1990) <i>Nature</i> , 344:126	
dm	ES	Zahler and Prescott, "Telomere terminal transferase activity in the hypotrichous ciliate <i>Oxytricha nova</i> and a model for replication of the ends of linear DNA molecules," (1988) <i>Nucleic Acids Res.</i> , 16:6953	
dm	ET	Zakian, Telomeres: Beginning to Understand the End," (1995) <i>Science</i> 270:1601	

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dw	EU	Zaug <i>et al.</i> , "Catalysis of RNA Cleavage by a Ribozyme Derived from the Group I Intron of Anabaena Pre-tRNA ^{Leu} ,"	
dw	EV	Zaug, A. J. et al., "Method for determining RNA 3' ends and application to human telomerase RNA," Nucleic Acids Research, 24 (3): 532-533 (1996).	

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